

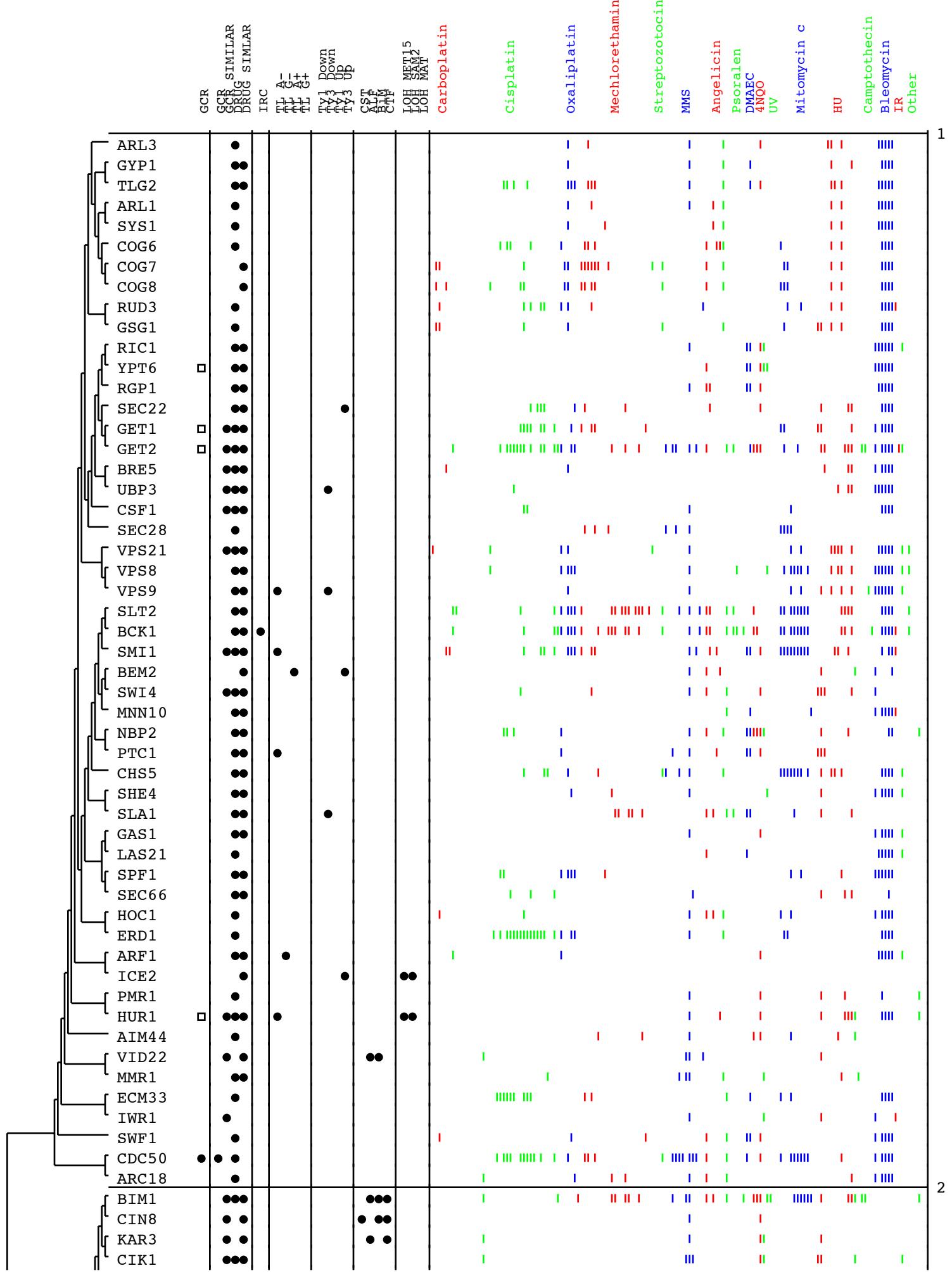
**Dataset S06.** Clustering of the 1041 genes in the final list are annotated by known GCR rates and identification in various genome-wide screens. The GCR Rate column identifies mutations tested in the GCR assay: circles were previously tested mutations (1-18); squares were mutations tested for this study; crosses were essential genes, which were not tested; filled-in symbols are mutations that increase GCR rates as single mutants; half filled-in symbols are mutations that only synergistically increase GCR rates in combination with other mutants; and open symbols are mutations not known to increase GCR rates. “Inclusion” indicates if a gene was identified in the GCR rate (GCR), by genetic congruence to the GCR set (GCR SIMILAR), DNA damaging agents (DRUG), or by genetic congruence to the DNA damaging agents (DRUG SIMILAR). “IRC” indicates those genes causing Increased Recombination Centers (19). “TL” are genes identified in two telomere-length screens by Askree *et al.* and Gatbonton *et al.* (20, 21): A- and G- are mutations causing decreased telomere lengths and A+ and G+ are mutations causing increased telomere lengths. “Ty” are mutations affecting Ty transposition; “Ty1 Down” are mutations causing decreased Ty1 transposition (22), “Ty1 Up” are mutations causing increased Ty1 transposition (23), and “Ty3 Down” and “Ty3 Up” are mutations affecting Ty3 transposition (24). “CST” are mutations identified as affecting chromosome stability; CST are mutations from (25), and ALF, BiM and CTF are three different chromosome stability assays from (26). LOH indicates mutations increasing loss-of-heterozygosity assayed at the *MET15*, *SAM2*, and *MAT* loci (27). Sensitivity to each DNA damaging agents (28-44) is indicated by vertical bars, with different treatments having alternate colors. Clusters are separated by horizontal lines and labeled with the cluster number. Cluster number “0” indicates the “unclustered” mutations.

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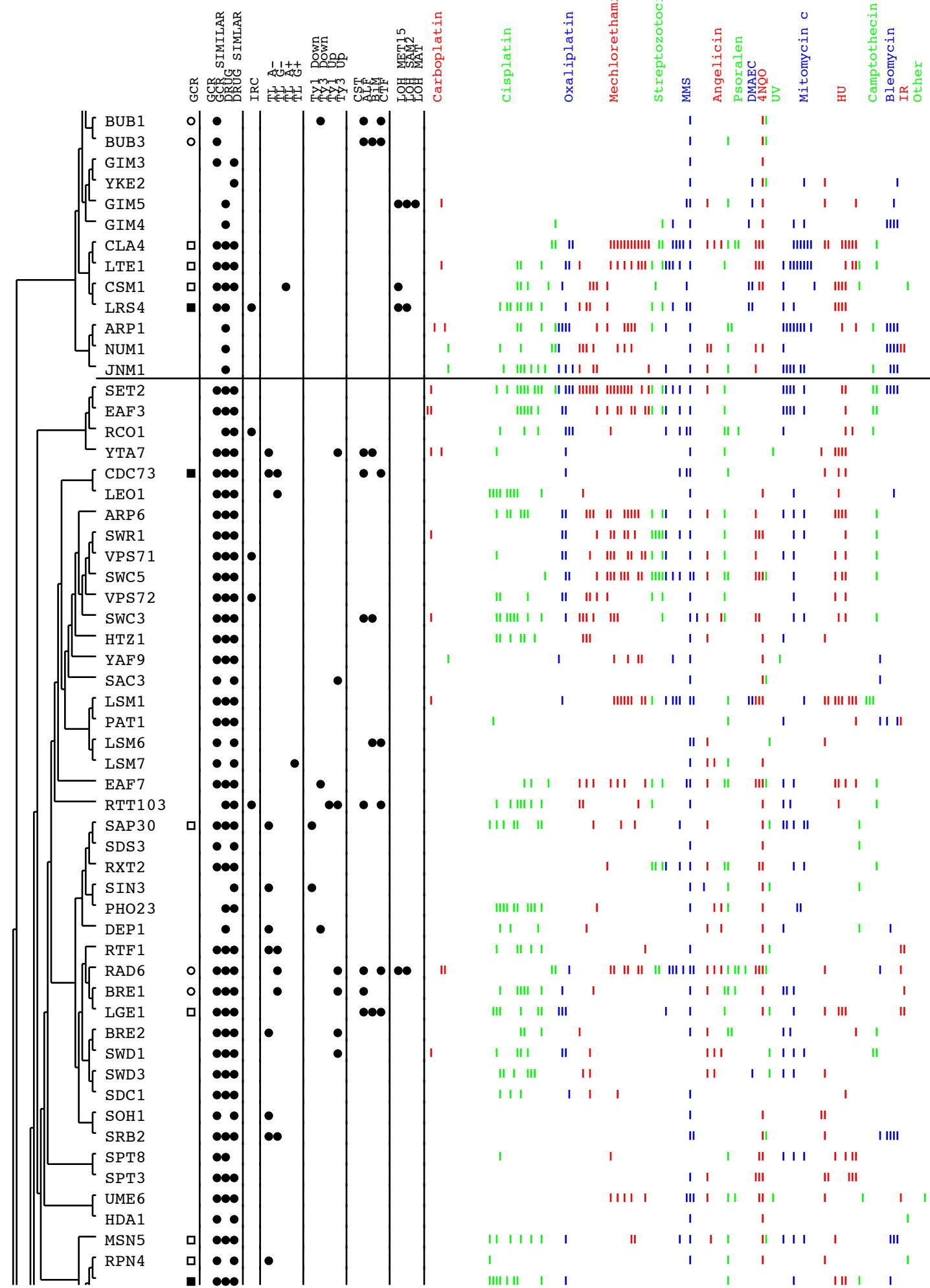
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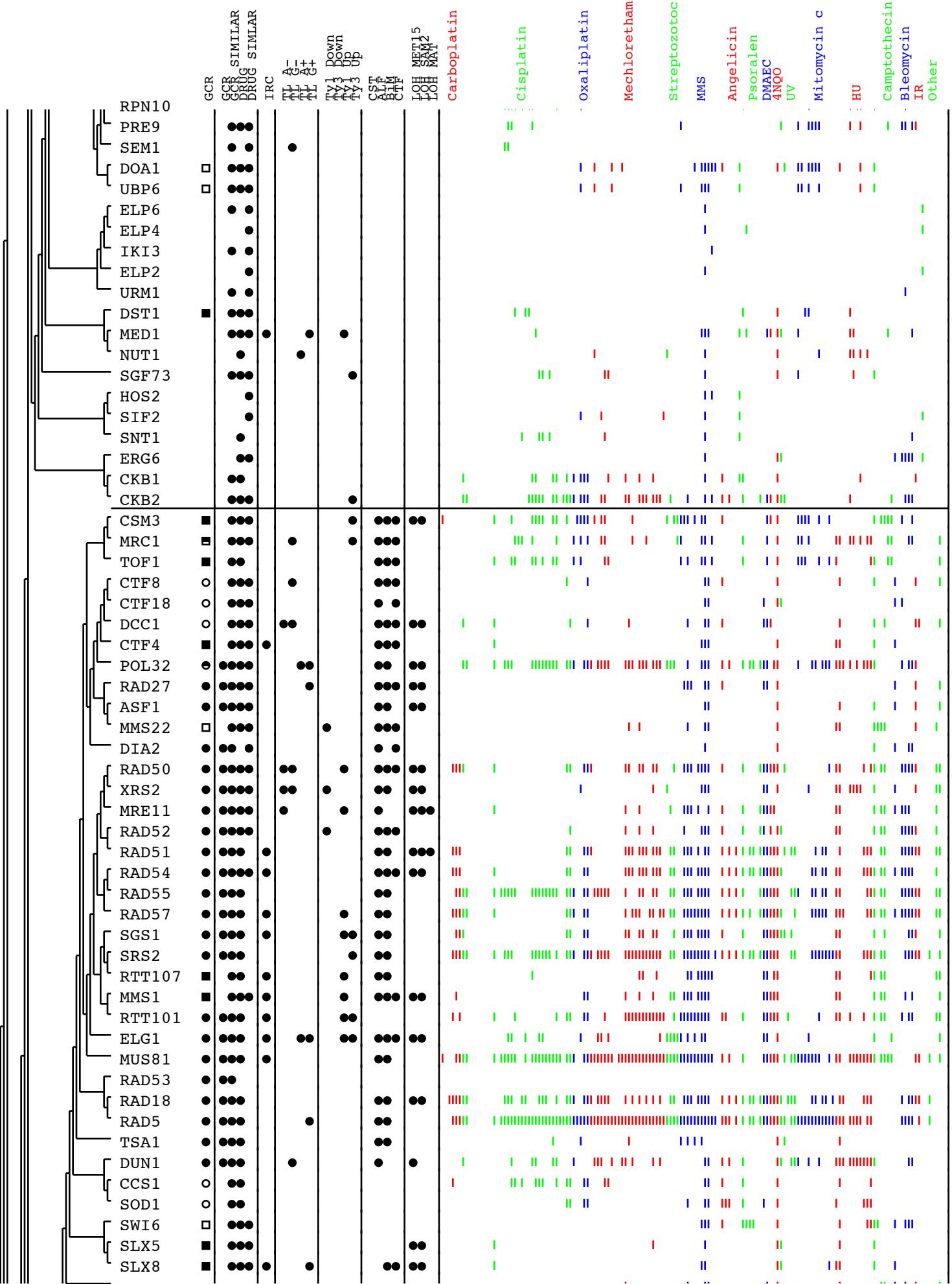
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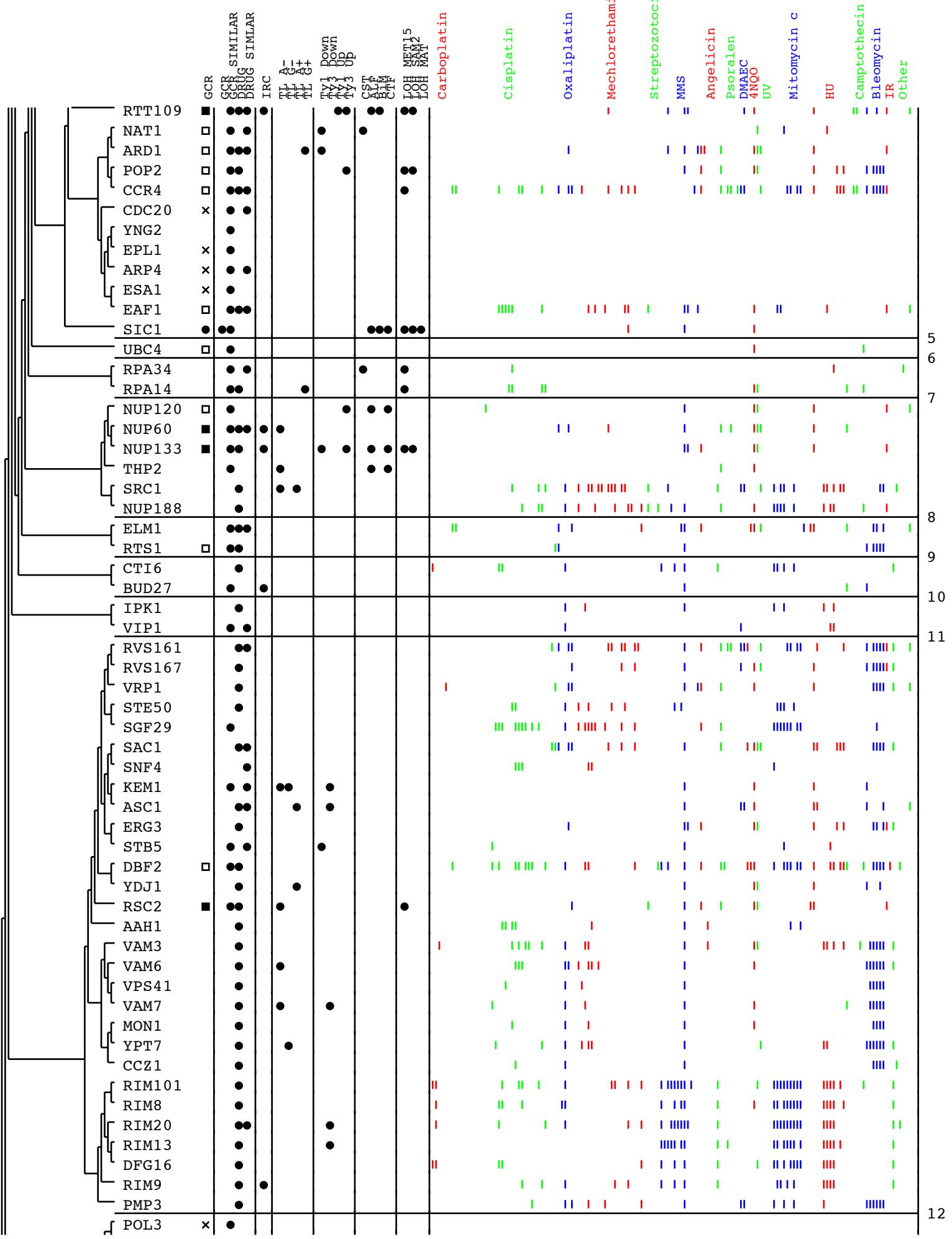


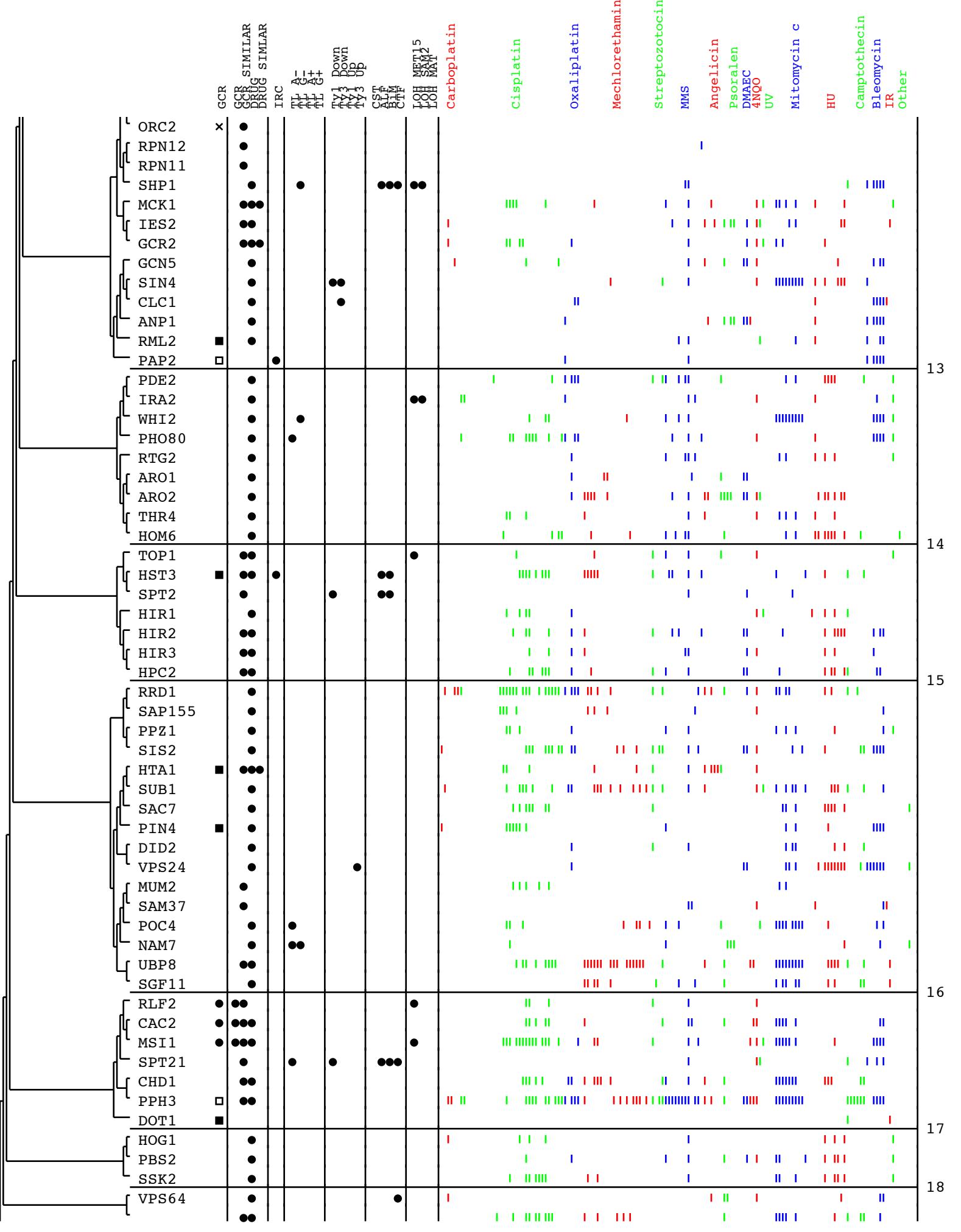
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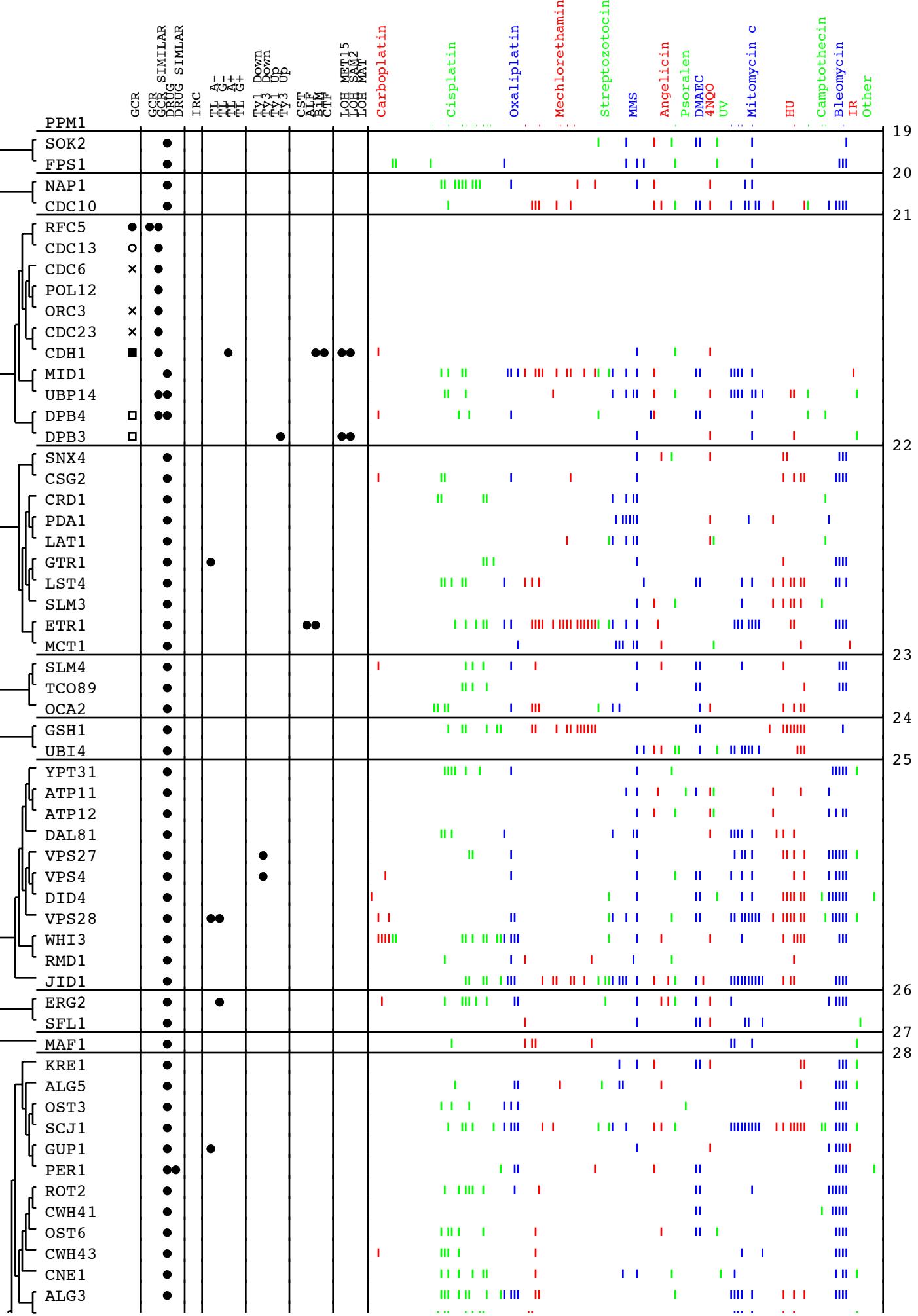
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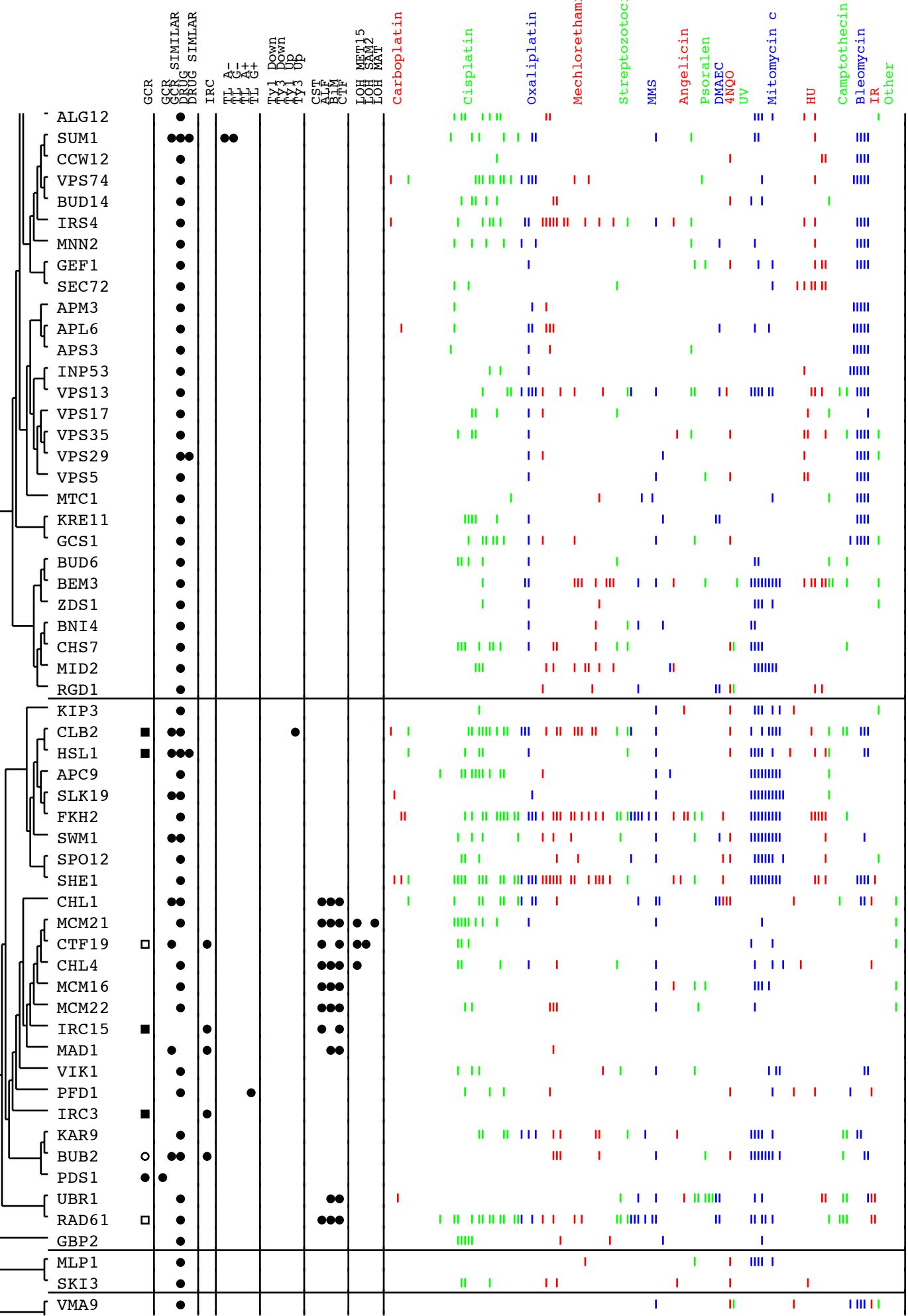


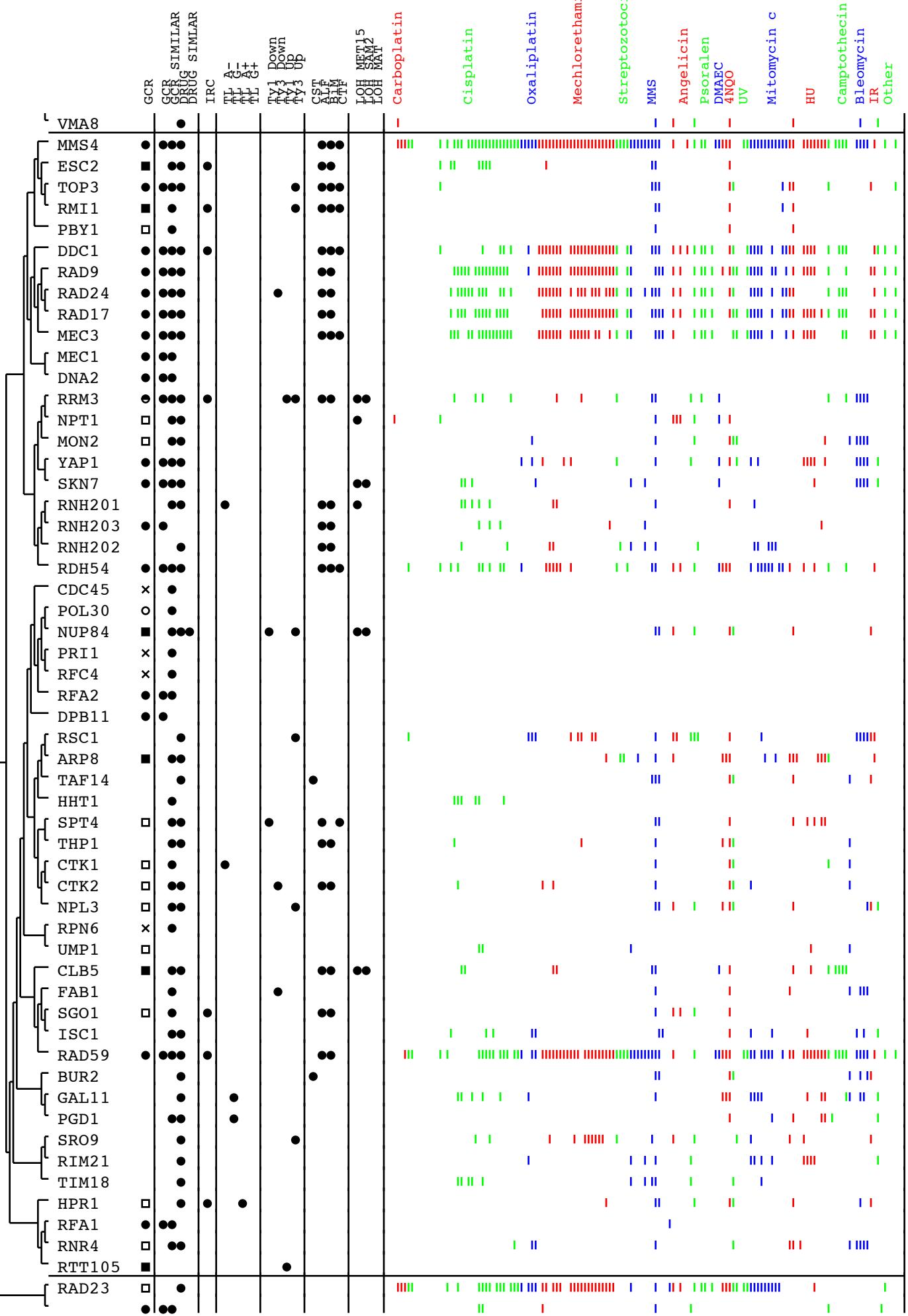












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